



ENGINEERING

ENVIRONMENTAL

INSPECTION

LAND SURVEYING

LAND ACQUISITION

PLANNING

WATER &
WASTEWATER

SINCE 1965

OFFICERS

William E. Hall, PE

Dave Richter, PE, PLS

Steven W. Jones

Christopher R. Pope, PE

B. Keith Bryant, PE

Michael Rowe, PE

PROFESSIONAL STAFF

Andrew T. Wolka, PE

Devin L. Stettler, AICP

Michael S. Oliphant, AICP

E. Rachelle Pemberton, PE

Timothy J. Coomes, PLS

Jon E. Clodfelter, PE

Steven R. Passey, PE

Brian J. Pierson, PE

Christopher L. Hammond, PE

Paul D. Glotzbach, PE

Brian S. Frederick, PE

Jay N. Ridens, PE

Christopher J. Dyer, PE

Matthew R. Lee, PE

William R. Curtis, PE

Jeromy A. Richardson, PE

Heather E. Kilgour, PE

Adam J. Greulich, PLS

Caleb C. Ross, PE

Dann C. Barrett, PE

Scott G. Minnich, PE

Jim R. Lesh, PE

Nicholas J. Kocher, PE

Jennifer L. Hart, PE

Jeffrey R. Andrews, PE

Kelton S. Cunningham, PE

Jonathan M. Korff, PE

Braun S. Rodgers, PE

Chris J. Andrzejewski, PE

Greg J. Broz, PE

John E. Harstad, PE

Asad A. Khan, PE

Joshua D. Gonya, PE

Brian S. Haefliger, PE

www.ucindy.com
(317) 895-2585
1625 N. Post Road, Indianapolis, IN 46219

October 6, 2017

Mr. Jeremy Lollar
Director of Public Works
City of Westfield
2706 E. 171st Street
Westfield, Indiana 46074

RE: Monon Trail at 161st Street
Over/Under Crossing Analysis and Recommendations

Dear Mr. Lollar:

We have completed the over/under crossing analysis for the Monon Trail where it intersects 161st Street. We are providing the following information, along with our recommendations, to assist you in determining the appropriate solution for the site.

Our analysis considered two options: (1) a tunnel to carry the Monon Trail traffic under both the existing and future configuration of 161st Street and (2) a bridge to carry the Monon Trail over both the existing and future configuration of 161st Street. Both options provide for the safe movement of users across 161st street and provide for a connection to the existing facilities along 161st Street. The opinions of cost included herein are based on conceptual designs utilizing the best available information at the time of the analysis and are in 2017 dollars and carry a 20% contingency. Further analysis is required to refine the budgetary cost information included herein.

Tunnel Option

The tunnel option consists of a 166 foot long tunnel. It connects to the portion of the tunnel that was constructed in 2013. The attached exhibit "A" shows the approximate limits of the work required for the tunnel option. The tunnel accommodates a 14 foot wide trail and provides for 10 feet of vertical clearance throughout the length of the tunnel. The tunnel extends underneath the access drive of the Pulte development.

The alignment of the trail will be offset to the west to avoid relocation of the AT&T fiber optic line running along the east side of the existing trail. Local access from 161st will be provided along the existing trail alignment south of 161st Street. Retaining walls are required to keep the project footprint inside the existing right of way for the trail. The existing water main running along the south side of 161st Street is in conflict with the proposed tunnel construction and will require relocation.

Bridge Option

The bridge option consists of a 770 foot long multi-span bridge. The attached exhibit "B" shows the approximate limits of the work required for the bridge option. The bridge accommodates a 12 foot wide trail and provides for 17'-6" of vertical clearance over 161st Street and spans the access drive of the Pulte development.

The alignment of the trail will be offset to the west to avoid relocation of the AT&T fiber optic line running along the east side of the existing trail. Local access from 161st will be provided along the existing trail alignment south of 161st Street. Retaining walls are required to keep the project footprint inside the existing right of way for the trail. The

existing water main running along the south side of 161st Street is not conflict with the proposed bridge construction and will not require relocation.

Due to the proximity of the buildings in the Pulte Development, it may be desirable to shift the trail alignment onto the existing alignment of the Monon Trail. Shifting the trail to the east does not affect the construction cost considerably, but will require the relocation of the existing AT&T fiber optic line along the east side of the existing trail.

Analysis Summary

Opinion of Probable Cost - Tunnel

Construction Cost	\$3,800,000
Utility Relocation Cost (Water Line)	\$250,000
Total	\$4,050,000

Opinion of Probable Cost - Bridge

Construction Cost	\$4,600,000
Utility Relocation Cost (AT&T Fiber Optic)	\$250,000
Total	\$4,850,000

Benefits

- Tunnel
 - Least cost option
 - Provides natural screening from Pulte Development
 - Utilizes advance tunnel construction from 2013
 - Avoids AT&T Fiber relocation
- Bridge
 - Improved drainage
 - Preserves the existing Pulte access drive
 - Shorter construction duration
 - Avoids Citizen's Water relocation
 - Better maintenance of traffic during construction

Challenges

- Tunnel
 - Extensive retaining wall construction
 - Construction noise from excavation operations
 - Longer construction duration
 - Drainage more complicated
 - Temporary impacts to Pulte access drive
 - Requires Citizen's Water relocation
- Bridge
 - Greatest cost option
 - Visual impacts to newly constructed Pulte development
 - Requires AT&T Fiber relocation

Recommendation

Based on the analysis of cost and consideration of the benefits and challenges, we recommend that the tunnel option be constructed to provide a grade separated crossing at this location. The Tunnel option provides a safe and efficient crossing and is consistent with the past study which commissioned the advance tunnel construction in 2013.

If you have any questions or comments, please contact me us your convenience.

Sincerely,
UNITED CONSULTING



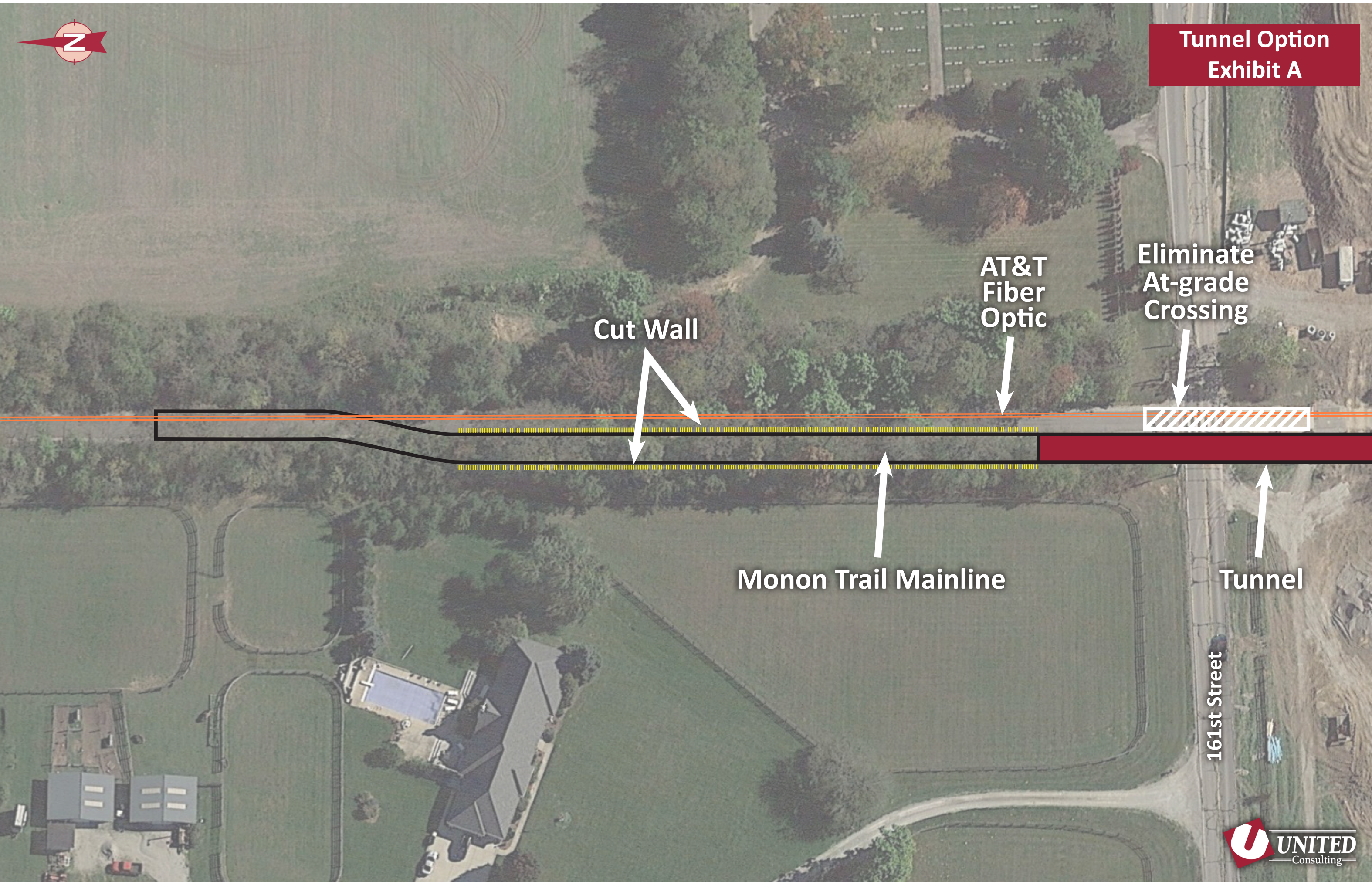
Chris R. Pope, PE
Vice President

enclosures

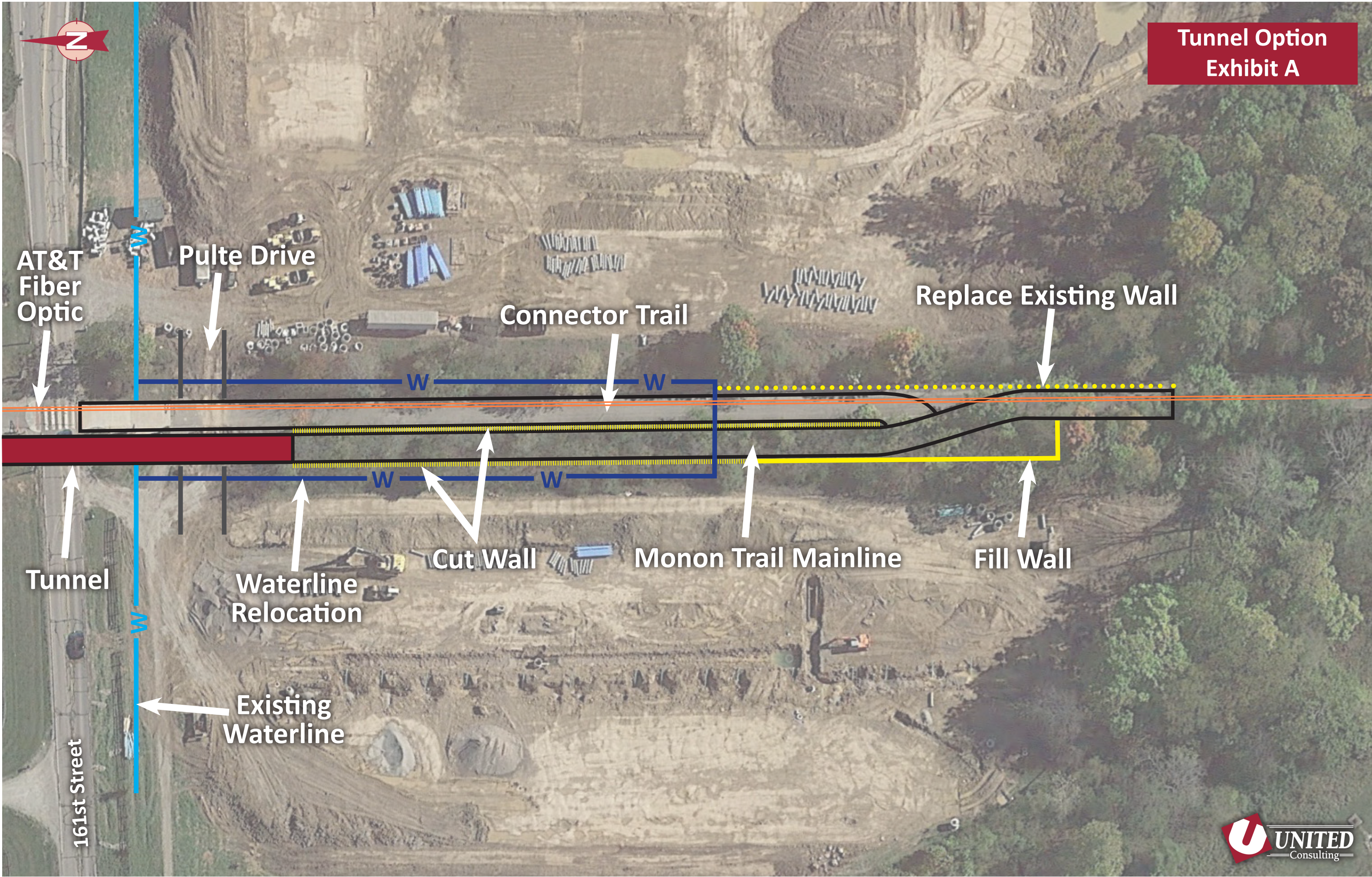
c: Phil Sundling PE, City Engineer
Brian Frederick, United Consulting
Jeff Larrison, United Consulting
File 14-214-02



**Tunnel Option
Exhibit A**



Tunnel Option
Exhibit A





**Bridge Option
Exhibit B**

Modular Block Wall

**AT&T
Fiber
Optic**

**Eliminate
At-grade
Crossing**

Monon Trail Mainline

Bridge

161st Street

Bridge Option
Exhibit B

